

<b>TITLE:</b>	<b>IBC03-Biological Safety Cabinet Operation</b>
<b>OVERVIEW:</b>	Biological safety cabinets are primary containment equipment utilized to protect the user, the product, and the environment from contamination when handling biohazardous agents.
<b>APPLIES TO:</b>	All users of biological safety cabinets.
<b>DEFINITION(S):</b>	<p>HEPA (High efficiency particulate air) filter - main part of the cabinet designed to remove particles equal to and greater than 0.3 μm (essentially includes all bacteria, spores, and viruses) with an efficiency of 99.97%.</p> <p>Biological safety cabinets (BSC) - ventilated cabinets which use directional airflow to provide personnel, environmental, and product protection.</p> <p>Class II, A1 BSC - cabinet design where 70% of the air is re-circulated to the cabinet work area through HEPA filtration and 30% is exhausted through HEPA filters back into the room (cannot be used for volatile toxic chemicals and radio nuclides and only minute amounts of nonvolatile toxic chemicals and radio nuclides).</p> <p>Class II, B2 BSC - cabinet design where 100% HEPA-filtered air is exhausted through a hard ducted dedicated exhaust system ( can be used for small amounts of volatile and nonvolatile toxic chemicals and radio nuclides).</p> <p>Class II, A2 BSC (formerly Class II, B3) - same type of cabinet as the Class II, A1 except the exhaust air from the cabinet is thimble-ducted to the outside through a HEPA filter (can be used for minute amounts of volatile and small amounts of nonvolatile toxic chemicals and radio nuclides).</p> <p>NSF 49- (National Sanitation Foundation Standard No. 49), the accepted standard for biological safety cabinet's certification which establishes performance criteria and provides the minimum requirements that are accepted in the US for BSC certification. Procedures for field testing are contained in the NSF / ANSI49-2002, Annex F of the Standard. (Refer to IBC02, Biosafety Cabinet Certification, for details on the certification process)</p>
<b>PROCEDURES:</b>	<p><b>General</b></p> <ul style="list-style-type: none"> <li>•Verify that the BSC is NSF certified within the past year.</li> <li>•Visually check the magnehelic gauge or electronic controls to observe for HEPA filter failure.</li> </ul>

	<ul style="list-style-type: none"> <li>•Minimize the storages of materials in and around the BSC.</li> <li>•Avoid using open flames inside the BSC. If a flame is necessary, use a burner with a pilot light and place the burner to the rear of the workspace.</li> <li>•Always use mechanical pipetting aids.</li> <li>•Do not work in a BSC while a warning light or alarm is signaling.</li> <li>•Keep the work area of the BSC free of unnecessary equipment or supplies. Clutter inside the cabinet may affect proper air flow and the level of protection provided.</li> <li>•Do not disrupt the protective airflow pattern of the BSC by rapidly moving your arms in and out of the cabinet.</li> <li>•Place a pan with disinfectant and/or sharps container inside the BSC for pipette discard. DO NOT use vertical pipette discard canisters on the floor outside the cabinet to dispose of pipettes containing a biohazardous material.</li> <li>•Clean up spills using the Biosafety Incident/ Spill Procedure (#IBC)</li> </ul> <p><b>Operation</b></p> <ul style="list-style-type: none"> <li>•Turn on the cabinet fan 5 minutes before beginning work.</li> <li>•Wipe work surface with 70% alcohol or any other appropriate disinfectant before starting the work.</li> <li>•Place supplies in the cabinet. DO NOT place any objects over the front air intake grille, or block the back of the exhaust grille.</li> <li>•When work is finished, remove all materials and wipe all interior surfaces with an appropriate disinfectant.</li> <li>•Allow the cabinet to run for at least 5 minutes after using. This fan may be left on indefinitely without causing problems to the BSC.</li> <li>•Remove personal protective equipment and wash hands thoroughly before leaving the laboratory.</li> </ul>
<b>RECORD KEEPING:</b>	All records of testing will be maintained on file in Facilities Management and Planning.
<b>OTHER INFORMATION:</b>	<p>Horizontal Laminar airflow cabinets (benches) are not BSCs. They are designed to discharge HEPA-filtered air across the work surface toward the user, providing product protection only. They are never used for the handling of biohazardous materials.</p> <p>Vacuum lines used to aspirate should be protected from contamination by use of a collection flask and overflow flask.</p> <ul style="list-style-type: none"> <li>•It is best to locate the collection flask inside the biosafety cabinet instead of on the floor.</li> <li>•The overflow flask may be located outside the cabinet.</li> <li>•A hydrophobic filter is recommended to prevent aerosol contamination of central vacuum systems or vacuum pumps.</li> <li>•The filter will also prevent microorganisms from being exhausted by</li> </ul>

	<p>the vacuum pump into the environment.</p> <p>UV lights, although not necessary for the function of the BSC, are preferred by some individuals for decontamination purposes.</p> <ul style="list-style-type: none"><li>•When used, the UV light should be wiped periodically with 70% alcohol to remove dust.</li><li>•UV irradiation should not take the place of liquid disinfection of the cabinet interior.</li><li>•The UV lamp should never be on while working in the cabinet.</li><li>•Follow procedures as outlined in the policy, Ultraviolet Lamp Safe Operation and Disposal (IBC16) when utilizing UV lamps for decontamination.</li></ul>
<b>REFERENCES:</b>	CDC/NIH. 2000. Primary Containment for Biohazards: Selection, Installation, and Use of Biological Safety Cabinets, 2nd Edition, US Government Printing Office, Washington, DC.
<b>STATUS:</b>	Update: March 24, 2-15